USSR

UDC 621.762.274

GOLUBKOV, L. A., YUR'YEV, B. P.

"Electrolytic Method of Producing Iron-Nickel-Molybdenum Alloy in Dispersed Form"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 1-7.

Abstract: This work studies the conditions of production of a three component Fe-Ni-Mo powder alloy. The design of the electrolyzer and electrical circuits are the same in principle as described in earlier works. One difference is that the use of a soluble molybdenum anode was found to be less suitable than the introduction of hexavalent molybdenum to the solution as the salt $(NH_4)_2MoO_4$. The method developed can produce powder alloys with various contents of the components (molybdenum concentration can vary from 0 to 15%, iron and nickel concentration can vary without limit). The electrolyte developed is stable in operation and contains no organic complex-forming agent; this allows electrolysis to be performed using several soluble and insoluble anodes with separate regulation of current passing through them. The influence of the electrolysis conditions (D_k, temperature, pH, solution composition) on cathode current efficiency, chemical composition and alloy structure is studied. It is established that under certain electrolysis conditions, when the process of electrodeposition of all metals

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GOLUBKOV, L. A., YUR'YEV, B. P., Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 1-7.

occurs according to diffusion kinetics, the composition of the alloy produced depends on the composition of the solution. The following optimal electrolysis conditions were established for the production of a permalloy powder alloy: electrolyte (in mol/l): $FeSO_4$ -- 0.030, $NiSO_4$ -- 0,160, $(NH_4)_2MoO_4$ -- 0.005-0,008, $(NH_4)_2SO_4$ -- 0.15, K_2SO_4 + Na_2SO_4 -- 0.1-0.2. In this case D_c = 2,000-3,000 a/m^2, temperature 20-25°, pH 2.5-2.7; D^{Fe}_a = = 100-200 a/m^2; D^{Ni}_c = 100-200 a/m^2; D^{Pb}_a = 1,000-2,000 a/m^2; D^{grid}_c = 50-75 a/m^2; $I^{Fe}_a : I^{Ni}_a$ = 5:27. The concentration of Mo(VI) is maintained by periodic addition of a solution of $(NH_4)_2MoO_4$ with pH 6-7.

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UDC 621.382.002

USSR

AMIRKHANOVA, I.B., GVERDTSITELI, I.G., GULDAMASHVILI, A.I., GOLUBKOV, V.B., DANSAMIDZE, E.M., ZASLAVSKIY, S.A., KARPENKO, T.T.

"Doping Of Silicon By Ion Bombardment"

V sb. Radiats. fiz. nemet kristallov (Radiation Physics Of Nonmetallic Crystals--Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.dumka." 1971, pp 111-122 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B456)

Translation: Doping of n-silicon with a resistivity of 0.035--150 ohm.cm was conducted by polyenergetic beams of boron ions with a current density of 10 ma.cm^{-2}, and maximum energy of 300 plus or minus 0.150 kev with doses of $1 \cdot 10^{15}$ -- $1 \cdot 10^{17}$ cm^{-2}. The uniformity of doping was attained by scanning and amounted to 10 percent. Annealing of the doped specimens was conducted in a vacuum at a temperature of 500--700° C during the course of 30 min. The method of studying the specimens and the results obtained are described. 7 ill. 8 ref. I.M.

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1/2 027 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--HELIUM CRYOSTATS WITH NITROGEN COOLING -U-

AUTHOR-(02)-PANKRATOV, N.A., GOLUBKOV, V.S.

6

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', NO 1, 1970, PP 70-75
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYOSTAT, DEWAR VESSEL, LIQUID HELIUM, LIQUID NITROGEN, COOLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1353 STEP NO--UR/0237/70/000/001/0070/0075

CIRC ACCESSION NO--AP0123311
UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0123311
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASIC SCHEMES OF CRYOSTATS AND DEWAR VESSELS FOR LIQUID HELIUM WITHOUT LIQUID NITROGEN COOLING ARE INVESTIGATED. A COMPARISON WAS MADE OF THE RELATIVE EVAPORABILITY OF HELIUM IN NITROGENLESS CRYOSTATS AND IN CRYOSTATS WITH SCREENS COOLED BY LIQUID NITROGEN.

UNCLASSIFIED

UDC: 512.25/.26+519.3:330.115

USSR

AVETISYZN, Dzh. A., BERTINOV, A. I., GOLUBKOV, Yu. A.

"Application of the Principle of Dynamic Programming to the Problem of Optimizing a Function of Many Variables"

V sb. Avtomatizir. elektroprivod v nar. kh-ve (Automation of Electric Drive in the National Economy--collection of works), T. 1, Moscow, "Energiya", 1971, pp 19-21 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V627)

Translation: The paper deals with the possibilities of constructing algorithms for direct search of the optimum based on R. Bellman's recurrent formulas. The set of resultant equations, in a number equal to the number of variables in the function to be optimized, provides the possibility of constructing computational algorithms of direct search for the maximum which are readily computerizable. Comparative estimates show the preferability for use of these algorithms to find a localized optimum. Their basic advantages are simplicity and identical search process both inside and outside the search region. Bibliography of six titles. Authors' abstract.

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USSR

UDC 681.3.06.51

GOLUBKOV, Yu. A.

"Modeling of Programs for Control Computers by Methods from the Theory of Stops"

Tr. Mosk. Aviats. In-ta. [Works of Moscow Aviation Institute] No. 194, 1970, pp 121-126 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V668 by V. Mikheyev).

Translation: The following problem is studied. The program is a graph without cycles, where the individual points reflect blocks testing logic conditions, while the individual branches are arithmetic blocks or entire subroutines. The course of performance of the program can therefore be looked upon as a branching process of decision making, decisions made at the points of testing of logic conditions. All points are easily ordered by layers of the branching tree and can be numbered with binary codes by known algorithms. Each individual branch of the tree can be looked upon as a realization of a program with specific performance conditions. Concretization is performed in the process of computer operation by successive testing of conditions and connection of the corresponding arithmetic units or subroutines for processing. It is obvious that each such connection requires a definite preliminary adjustment. Methods must be found, allowing this testing to be curtailed in certain cases. This allows the number of testing and tuning operations to be reduced. The solution of the problem is sought by methods of

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UDC 681.3.06.51

GOLUBKOV, Yu. A., Tr. Mosk. Aviats. In-ta. [Works of Moscow Aviation Institute] No. 194, 1970, pp 121-126.

the theory of stops recurrent functional equasions are produced, allowing the optimal stopping sets to be defined.

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UDC 661.882:669.295.4:541.183

USSR

GOLUBKOV, YU. V., AGRINSKAYA, L. N., KOROLEV, V. V., and MISEL'SON, L. A.
Scientific Research and Development State Institute of Rare Metal Industry

"Investigation of the Adsorption Purification of Titanium Tetrachloride"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 45, No 8, Aug 72, pp 1661-1664

Abstract: To purify titanium tetrachloride from various admixtures, a combination of chemical processes and fractional disdillation is used in industry. An investigation of the statics and dynamics of adsorption purification over BAU activated charcoal showed that this method is more efficient in removing the impurities $VOCl_3$, Si_2OCl_6, and CCl_3COCl. The BAU charcoal column must be at least 130 cm high for an effective separation of $TiCl_4$ from above impurities.

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USSR

UDC 669.295.48

KHUDAYBERGENOV, T. YE., RUBAN, N. N., NISEL'SON, L. A., POGORELOV, V. I., GOLUBKOV, YU. V.

Pererabotka pul'p chetyrekhkhloristogo titana i mednovanadiyevykh kekov (Processing Titanium Tetrachloride Pulp and Copper-Vanadium Cakes), Institute of Metallurgy and Beneficiation of the Kazakh SSR Academy of Sciences, Alma-Ata, 1971, 21 pp, 19-entry bibliography (No2694-71 Dep) (from RZh-Metallurgiya, No 7, Jul 1971, Abstract No 7G241 DEP)

Translation: This is a survey. The published information about the methods of processing $TiCl_4$ pulp and Cu-V cakes to extract $TiCl_4$ and V and Cu compounds is classified. A critical analysis is performed, and it is demonstrated that all the proposed procedures have a number of essential deficiencies both with respect to equipment and technological process. These deficiencies make it impossible to introduce them into industrial production. It is recommended that scientific research work be continued in this area. The bibliography has 19 entries.

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GOLUBKOV, Yu. V.

Chemistry

JPRS 55263

24 February 1972

UDC 669.295.4

COMPARATIVE EVALUATION OF VARIOUS METHODS OF REFINING TITANIUM TETRACHLORIDE

[Article by L. A. Nisel'son, Yu. V. Golubkov, and I. Yaa, Khudayberdyev, Moscow, Tsvetnyye Metally, Russian, No 11, 1971, pp 41-46]

Titanium tetrachloride is a very important intermediate for the production of metallic titanium and titanium dioxide pigment. Its production approaches tens of thousands of tons per year in the industrially developed countries. The production of titanium metal as well as the production of titanium dioxide place stringent demands on the purity of the tetrachloride used as the starting material.

Technical $TiCl_4$ consists of a very complex non-equilibrium system containing many minor components. It contains a broad spectrum of impurities which are clearly determined by the nature of the starting materials and by the chlorination method. The domestic industry produces the bulk of technical titanium tetrachloride by the established technology. In accordance with this technology, the titanium-containing slags or concentrates are chlorinated in the presence of carbon-containing reducing agents (petroleum or coal-tar coke) in shaft furnaces (in the form of briquets), or, preferably, in molten chlorides of the alkali or alkaline earth metals (for example, in the spent electrolytes from the electrolytic magnesium cells). As a rule, the chlorination of titanium-containing raw materials in molten salts yields purer $TiCl_4$ than that obtained by the chlorination in electric shaft furnaces. Thus, for example, on chlorination in the melt, most of the aluminum remains in the melt and is partially trapped in the condensation system as $NaAlCl_4$ which considerably facilitates the subsequent purification of the tetrachloride, involving aluminum removal. As a second example we may cite the sulfur-containing impurities which are present in the technical titanium tetrachloride in quantities that are determined not only by the sulfur content of the starting material, but also by the type of the chlorinating agent.

The resulting technical-grade titanium tetrachloride is a milky (due to the presence of hydrolysis products and entrained starting material) and fuming liquid that varies in color from yellow-green to dark red, depending on the quantity and type of impurities present.

The impurities found in the technical titanium tetrachloride may be tentatively divided into three basic groups depending on their physical form at the normal boiling point of $TiCl_4$ and their solubility in the tetrachloride:

1) Gases and vapors (O_2, H_2, CO_2, Cl_2, $COCl_2$, HCl, etc.);

2) liquids ($SiCl_4$, CCl_4, $VOCl_3$, CCl_3COCl, Si_2OCl_6, etc.);

3) solids ($FeCl_3$, $TiOCl_2$, $MgCl_2$, C_6Cl_6, $POCl_3.TiCl_4$, $AlCl_3$, etc.).

Under normal conditions, the impurities of the first group are gases or vapors that are only sparingly soluble in $TiCl_4$ and are, therefore, readily removed from the latter simply by boiling. The second group contains compounds that are either liquids or low-melting solids under normal conditions. All of these compounds are miscible with $TiCl_4$ in all proportions. This group contains the majority of the compounds that are very difficult to remove, e.g., $VOCl_3$ and Si_2OCl_6. Finally, the third group contains solid compounds. Most of the impurities in this group are practically insoluble in titanium tetrachloride ($MgCl_2$, $CaCl_2$, $MnCl_2$, etc.), or are almost insoluble ($AlCl_3$, $FeCl_3$, $POCl_3.TiCl_4$, etc.).

The analytical data on the common types of technical titanium tetrachloride are given in Table 1. In the same table are also listed the specifications for purified $TiCl_4$ according to TU-39--60 [Tekhnicheskiye Usloviya; Technical Conditions (Specifications)] and the impurity levels commonly attained under practical industrial conditions.

In the case of titanium tetrachloride which is slated for the production of the titanium dioxide pigment, the content of the so-called tinting impurities must be limited. These impurities are mainly those containing iron, vanadium, and chromium. In the case of titanium tetrachloride which is used in the production of titanium sponge, the impurities that increase the titanium sponge hardness must be limited, i.e., the impurities containing oxygen, sulfur, carbon, vanadium, and silicon [1].

1/2 042 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--CONVERSION OF POTASSIUM CARBONATE INTO POTASSIUM BICARBONATE IN A LOW TEMPERATURE ZONE OF THE GAS CHANNEL OF A MAGNETOHYDRODYNAMIC, MHD,

AUTHOR-(05)-GOLUBKOVA, A.S., ZAKHAROVA, N.I., LARICHEVA, M.A., MOSTINSKIY, L.L., NEKHOROSHEV, R.S.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(2), 459-60

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, ENERGY CONVERSION (NON-PROPULSIVE) PROPULSION AND FUELS

TOPIC TAGS--COMBUSTION PRODUCT, IONIZATION, POTASSIUM CARBONATE, MAGNETOHYDRODYNAMIC CONVERSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1913 STEP NO--UR/0294/70/008/002/0459/0460

CIRC ACCESSION NO--AP0132175

UNCLASSIFIED

2/2 042 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132175

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONVERSION OF THE IONIZING ADDN. K SUB2 CO SUB3 TO KHCO SUB3 IN THE LOW TEMP. ZONE OF MHD GENERATORS WAS STUDIED AT COMBUSTION PRODUCT TEMPS. 70-250DEGREES, ABS. PRESSURES 5.5-7.5 N-M PRIME2, AND CO SUB2 CONTENTS IN THE COMBUSTION PRODUCTS OF 8-9.5PERCENT. SHIELDED PROBE AND ISOSTATIC SAMPLING ON GLASS WOOL OF DUST LADEN VAPORS FOLLOWED BY CHEM. ANALS. CONFIRMED THAT KHCO SUB3 FORMED AT TEMPS IS SMALLER THAN 160DEGREES AND THE FRACTION KHCO SUB3 WAS 40 AND 80 WT. PERCENT AT 120 AND 70-90DEGREES, RESP.

FACILITY: INST. VYS. TEMP., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.372.061.2

GOLUBNICHIY, A.F., LAINE, A.A., RYABOV, YU.D.

"Stability Criteria Of The Frequency Characteristics Of Microelectronic Active RC-Circuits"

Elektrosvyaz', No 3, Mar 1972, pp 53-59

Abstract: Criteria are considered and functions are found for an evaluation of the stability of the frequency characteristics of microelectronic active RC-circuits. The real mechanism of the destabilization of frequency characteristics is considered. Functions are found as criteria for evaluation of the deviations of the amplitude-frequency characteristic and phase-frequency characteristic of a circuit. Two examples are given which illustrate the basic results of the work. 2 fig. 1 tab. 19 ref. Received, 9 Mar 1971.

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1/2 016 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--SONOLUMINESCENCE OF AQUEOUS SOLUTIONS OF SUCROSE AND GLYCEROL -U-

AUTHOR-(02)-GOLUBNICHIY, P.L., GONCHAROV, V.D.

COUNTRY OF INFO--USSR

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SOURCE--AKUST. ZH. 1970, 16(1), 142-5

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LUMINESCENCE, AQUEOUS SOLUTION, SUCROSE, GLYCEROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2262 STEP NO--UR/0046/70/016/001/0142/0145

CIRC ACCESSION NO--AP0125840

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125840

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LUMINESCENCE DUE TO ULTRASOUND CAVITATION IS STUDIED WITH A DEVICE DESCRIBED EARLIER (1969). THE EFFECT OF TEMP. AND OF CONCN. OF SUCROSE OR GLYCEROL ON THE LUMINESCENCE INTENSITY (I) WAS STUDIED AND COMPARED WITH THE VISCOSITY OF THE SOLNS.; THE EFFECT OF TRACE H SUB2 O IS POINTED OUT. A RELATION WAS FOUND BETWEEN I AND THE COMPRESSIBILITY (BETA): LOG(I SUBS-I SUBO) EQUALS BETA SUBO-BETA SUBS MINUS 1 (S AND O REFER TO SOLN. AND PURE WATER VALUES, RESP.). FACILITY: INST. YAD. FIZ., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

UDC 517.5

GOLUBOV, B. I.

"Asymptotic Behavior of L_p-Norms of Derived Fourier Sums of Functions of Bounded Variation"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Matematicheskaya, Vol 37, No 2, Mar-Apr 73, pp 399-421

Abstract: A generalization of the following formula for 2π-periodic functions $f(x)$ of bounded variation;

$$\lim_{n\to\infty} \frac{\| S'_n(x, f) \|_{L_2[-\pi,\pi]}}{\sqrt{n}} = \left\{ \frac{1}{\pi} \sum_k |f(x_k + 0) - f(x_k - 0)|^2 \right\}^{1/2},$$

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USSR

GOLUBOV, B. I., Izvestiya Akademii Nauk SSSR,Seriya Matematicheskaya, Vol 37, No 2, Mar-Apr 73, pp 399-421

is obtained for the case of L_p-norms and functions of bounded q-variation ($1 \leqslant q < p \leqslant \infty$). It is shown that the tests of N. WIENER and S. M. LOZINSKIY for the continuity of functions of bounded variation can be proved by a single method; viz., on the basis of an evaluation for the $L_2(L_\infty)$-norms of derived Fourier sums (or sums conjugate to them) for functions of bounded variation. To prove these results, the asymptotic behavior is established for the L_p-norms of the Dirichlet kernels $D_n(x)$, where $n \to \infty$.

The author thanks P. L. UL'YANOV for his constant interest in his work.

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1/3 019 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STRIPPING OF SLAGS FROM THE SHAFT MELTING OF NICKEL ORES IN AN ELECTRIC FURNACE WITH COKE CONDUCTANCE -U-
AUTHOR-(04)-LISOVSKIY, D.I., SOSNOVSKIY, O.V., LYAPUNOV, I.D., GOLUBOV, V.I.
COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(4), 36-9

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--ELECTRIC FURNACE, NICKEL ORE, SLAG, METAL MELTING, FERRONICKEL, METAL REDUCTION, METAL OXIDE, CHROMIUM OXIDE, COBALT, FILTRATION, COKE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0148 STEP NO--UR/0136/70/043/004/0036/0039

CIRC ACCESSION NO--AP0132436
UNCLASSIFIED

2/3 019 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132436

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE DEALS WITH THE EFFICIENCY OF THIS TYPE OF FURNACE IN THE FILTRATION OF MOLTEN NI SLAGS THROUGH COKE AND THE EFFECTS OF VARIOUS FACTORS ON SLAG STRIPPING. THE SLAG COMPN. WAS SIO SUB2 45, FEO 15, CAO 25, AL SUB2 O SUB3 8, AND MGO 6PERCENT. THE SLAG WAS CHARGED INTO THE FURNACE CONTAINED NI 0.06-0.14 AND CO 0.01-0.02PERCENT. THE COMPN. OF THE PPTD. FERRONICKEL FROM 2 DIFFERENT MELTS WAS NI 4.5, 12.8; S 2.15, 154; SI 0.0055, 0.034; CR 0.073, 0.056; C 4.63, 5.73; MN 0.14, 0.093; AND P 0.084, 0.092. AT HIGH COKE LAYER TEMPS., THE DEOXION. OF FE IS SIGNIFICANT, SO THAT THE NI AND CO CONTENTS OF THE FERRONICKEL ARE LOW. THE LATTER ALSO EXHIBITS LARGE AMTS. OF CR AND SI. THE EXPTL. MELTS INDICATE THAT THE EXTN. OF NI AND CO IS ASSOCD. WITH THE EXTENT OF DEOXION. OF THE FE, THIS BEING DETD. BY THE SLAF COMPN., THE ENTRY AND EXIT TEMPS. OF THE SLAG, THE SIZE OF THE COKE FINES FILTER, AND THE FLOW OF SLAG. CURVES ARE GIVEN SHOWING THE DISTRIBUTION COEFF. OF NI AND CO BETWEEN THE SLAG AND THE METAL PHASE AS A FUNCTION OF THE TEMP. THESE EXHIBIT WELL DEFINED MIN. AT 1275-1325DEGREES. THE INCREASE IN THE DISTRIBUTION COEFF. BELOW 1275DEGREES CAN EVIDENTLY BE EXPLAINED BY INADEQUATE SETTLING OF THE FENI PARTICLES RESULTING FROM THE HIGH VISCOSITY OF THE SLAG AND THE SMALLNESS OF THE SETTLING TANK. DECREASING THE COKE TEMP. DECREASES THE IMPURITY CONTENT IN THE ALLOY OBTAINED. THIS IS EVIDENTLY ASSOCD. WITH THE CONSIDERABLE REON. OF CR AND SI OXIDES WHICH OCCURS DUE TO THE FORMATION OF HIGH POWER INCRO ARCS WHEN THE CONTACTS BETWEEN THE COKE PARTICLES ARE DISTURBED.

UNCLASSIFIED

3/3 019 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0132436
ABSTRACT/EXTRACT--AN INDUSTRIAL FURNACE OF FLOOR AREA 1.5-2.0 M PRIME2 IS CAPABLE OF ACHIEVING 50-60PERCENT EXTN. OF NI AND 40-5PERCENT EXTN. OF CO FOR A SP. POWER CONSUMPTION OF 50 KW-H4-TON SLAG.

UNCLASSIFIED

GOLUBOVA, N.G.

JPRS 58760
16 Apr 73

(3)

INVESTIGATION OF CERTAIN LAWS GOVERNING CREEP AND RUPTURE IN HEAT-RESISTANT MATERIALS

[Article by I. I. Trunin, N. G. Golubova; Kiev, Problemy Prochnosti, Russian, No 7, July 1972, submitted 26 October 1971, pp 53-54]

Processes of increased deformation (creep) and the development of rupture centers occur in metals under the influence of permanent stresses or loads at high temperatures. The resistance of material to these processes depends largely on its durability under operating conditions.

One of the most important characteristics of refractory materials designed for long-term service is its deformation capacity, evaluated in terms of plasticity that builds up to the moment of rupture during creep.

It is known that metal with low deformation capacity in the presence of stress raisers or, in the case of negligible temporary overloads in the presence of stresses that are substantially below the stress-rupture limit, is inclined to sudden brittle rupture. An increase in strength properties, by which rupture resistance is determined, usually entails reduction of plastic properties. The problem of the optimal ratio of these two characteristics has not yet been solved.

Deformation resistance and plasticity that builds up in a material during creep can be evaluated by means of the minimum (steady state) and average creep rate, and also on the basis of the time of accumulation of a given amount of deformation.

The complexity of the problem as it applies to refractory materials designed for long service periods consists in the absence of sufficiently reliable methods of forecasting these values for the given period.

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[1]From the materials of the Scientific-Technical Conference on Problems of Rupture and Strength Criteria of Materials and Structural Parts, held in Kiev in October 1971.

USSR UDC: 669.017.539.376

Trunin, I. I., Golubova, N. G., Moscow

"Study of Certain Regularities in the Processes of Creep and Rupture of Heat-Resistant Materials"

Kiev, Problemy Prochnosti, No 7, 1972, pp 50-54.

Abstract: Problems of estimating the deformation-resistance and long-term ductility of heat-resistant materials with long service life are studied. Metallographic analysis of the nature of rupture and determination of the volume of metal occupied by pores are used to establish the relationship between deformation capacity and degree of accumulation of damage during the process of long-term strength testing. Analysis of the degree of damage of the metal by rupture centers with various levels of long-term ductility shows that the deformation capacity is characterized not only by the ability of the material to redistribute stresses, but also by the degree of localization of damage accumulated during the process of creep.

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USSR UDC 535.9

BYKHOVSKIY, D. G., GOLUBOVSKAYA, S. M., GOLUBOVSKIY, Yu. B., and KAGAN, Yu. M.

"Spectroscopic Study of Plasma Parameters at the Output of a Plasmatron. II"

Leningrad, Optika i Spektroskopiya, No. 5, May 71, pp 836-840

Abstract: The radial change in the parameters of a plasma at the output of a plasmatron was calculated on the basis of measurements of the brightness of spectral lines of ArI and Hα. The measurements were made in pure argon and in an argon-hydrogen mixture. The addition of hydrogen led to a rise in temperature at the axis and to a sharper falling off. The concentration of argon atoms in the center was lowered and they were drawn to the periphery of the arc. Electron concentrations measured on the basis of shift and on the basis of the intensity of spectral lines in pure argon were compared. The measurements are presented in graphical form.

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1/2 050 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--SPECTROSCOPIC STUDY OF PLASMA PARAMETERS IN THE OUTPUT OF A PLASMATRON. I. RADIAL DISTRIBUTION OF ELECTRON CONCENTRATION IN ARGON

AUTHOR-(03)-GOLUBOVSKAYA, S.M., GOLUBOVSKIY, YU.B., KAGAN, YU.M.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 223-7

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPECTROSCOPY, ARGON, ELECTRON, CONCENTRATION GRADIENT, SPECTRAL LINE, LINE WIDTH, LINE SHIFT, DISTRIBUTION THEORY, FLOW ANALYSIS, GAS FLOW/(U)DFS8 SPECTROGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1781 STEP NO--UR/0051/70/028/002/0223/0227

CIRC ACCESSION NO--AP0112767

UNCLASSIFIED

2/2 056 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0112767

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTRON CONCN. IN AR WAS MEASURED ON THE BASIS OF THE WIDTH AND SHIFT OF THE AR I 7067, 7504, AND 7635 ANGSTROM LINES IN A PLASMATRON AT 100 AND 200 ANGSTROM; THE NOZZLE DIAMS. WERE 3 AND 4 MM, AND THE RATE OF FLOW OF THE GAS WAS 1000-1500 L.-HR. A DFS-8 SPECTROGRAPH (6 ANGSTROM-MM), CROSSED WITH A FABRY-PEROT STANDARD, WAS USED AS A MONOCHROMATOR FOR THE PRELIMINARY DISPERSION. A DISCHARGE AT 1 TORR AND 50 MA WAS USED AS A SOURCE OF NARROW NONSHIFTED LINES. BY BOTH THE WIDTH AND SHIFT, THE SAME MEAN ELECTRON CONCN. VALUES (0.8 TIMES 10 PRIME17-CM PRIME3) WERE OBTAINED. THE RADIAL DISTRIBUTION OF ELECTRON CONCN. IN AR WAS DETD. ON THE BASIS OF SPECTRAL LINE SHIFT; THIS METHOD IS MORE SUITABLE, SINCE NO ELIMINATION OF APP. AND DOPPLER CONTOURS IS NEEDED.

UNCLASSIFIED

1/3 012 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SEASONAL FLUCTUATION OF LETHAL MUTATIONS IN THREE NATURAL POPULATIONS OF DROSOPHILA MELANOGASTER -U-

AUTHOR--GOLUBOVSKIY, M.D.

6

COUNTRY OF INFO--USSR

SOURCE--GENETIKA 6(1): 78-91. ILLUS. 1970.

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DROSOPHILA, CHROMOSOME, MUTATION, SEASONAL VARIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605013/011 STEP NO--UR/0473/70/006/001/0078/0091

CIRC ACCESSION NO--AP0140404
UNCLASSIFIED

2/3 012 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140404

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FREQUENCIES AND RATE OF ALLELISM, OF LETHAL MUTATIONS IN THE 2ND CHROMOSOME OF DROSOPHILA MELANOGASTER WERE STUDIED. FLIES WERE CAPTURED IN 3 NEIGHBORING POPULATIONS FROM UMAN (UKRAINE) IN SUPPER (JUNE) AND AUTUMN (OCTOBER). TWO POPULATIONS WERE TAKEN FROM A FRUIT PROCESSING FACTORIES, WHILE A 3RD POPULATION FROM A LARGE FRUIT GARDEN. THE 3 LOCALITIES ARE ABOUT 3 TO 5 KM APART FROM EACH OTHER AND BETWEEN THEM OCCURS A SLIGHT MIGRATION OF FLIES. LETHALS WERE ISOLATED AND MAINTAINED IN THE LABORATORY BY USING BALANCED STOCK. APPROXIMATELY 10000 DIALLELIC CROSSES WERE MADE BETWEEN LETHAL STOCKS. THE FREQUENCIES OF LETHALS WITHIN POPULATIONS WERE SIMILAR IN DIFFERENT SEASONS, 14.4, 16.0, 13.8PERCENT IN SUMMER AND 16.1, 14.2, 12.3PERCENT IN AUTUMN, RESPECTIVELY. SIMILAR CONCENTRATIONS IN SUMMER AND AUTUMN RESULTED FROM MUTATIONS OF DIFFERENT GENE NUMBERS. BY THE END OF BREEDING SEASON THE GENE POOL OF LETHALS IS SIGNIFICANTLY ENRICHED. ALLELIC RATE OF MUTATIONS SAMPLED IN SUMMER WAS 4.26PERCENT AS COMPARED WITH 2.18PERCENT IN AUTUMN. ALLELIC RATE BETWEEN LETHALS SAMPLED IN DIFFERENT SEASONS WAS 3.14PERCENT. AS EVIDENCED FROM ANALYSIS OF ALLELISM, THE POOL OF LETHALS SAMPLED FROM DIFFERENT POPULATIONS IN SUMMER COULD BE DIVIDED IN 2 GROUPS: RARE LETHALS, WITH LOW FREQUENCIES IN EACH POPULATION, REPEATED LETHALS, WITH HIGH CONCENTRATION OF THEIR LETHAL ALLELES IN DIFFERENT POPULATIONS. RARE MUTATIONS ARE ALMOST RENEWED FROM THE BEGINNING TO THE END OF REPRODUCTION SEASON, ONLY 6PERCENT OF RARE LETHALS WERE COMMON TO BOTH SEASONS. MORE THAN 70PERCENT OF REPEATED LETHALS WERE REDETECTED IN BOTH SEASONS.

UNCLASSIFIED

3/3 012 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140404

ABSTRACT/EXTRACT--THE FREQUENCIES OF LETHALS OBSERVED IN SUMMER AND AUTUMN WERE GENERALLY LOWER IN AUTUMN. FREQUENCY OF SOME LETHALS MAY INCREASE SIMULTANEOUSLY IN DIFFERENT POPULATIONS AT OVERWINTERING PERIOD AND THEN DECREASE. THIS IS DUE TO SELECTION OF HETEROZYGOTES BUT NOT TO GENETIC DRIFT OR THE MUTATION PROCESS. THE ADAPTIVE VALUE OF SOME LETHAL HETEROZYGOTES IS HIGH DURING WINTERING BUT THEN IN THE PERIOD FROM SUMMER TO AUTUMN IT DECREASES. FACILITY: INST. CYTOL. GENET., SIB. BR. ACAD. SCI. USSR, NOVOSIBIRSK, USSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF ATTENUATION ON THE RESULTS OF MEASURING THE ANGULAR DEPENDENCE OF THE INTENSITY OF CRITICAL OPALESCENCE IN BINARY MIXTURES

AUTHOR--GOLUBOVSKIY, N.YU.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(3), 471-3

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LIGHT SCATTERING, ANGULAR DISTRIBUTION, RADIATION INTENSITY, LIGHT ABSORPTION, ERROR CORRECTION, ANILINE, CYCLOHEXANE, CRITICAL POINT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1482 STEP NO--UR/0051/70/028/003/0471/0473

CIRC ACCESSION NO--AP0118471

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118471

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ATTENUATION DUE TO PRIMARY AND SECONDARY SCATTERED RADIATION CONSIDERABLY AFFECTS THE RESULTS OF ANGULAR DISTRIBUTION OF INTENSITY OF SCATTERED LIGHT IN A HIGHLY SCATTERING MEDIUM. TWO ATTENUATION CORRECTION COEFFS. HAVING ANGULAR DEPENDENCE ARE INTRODUCED. THE RESULTS OF EXPTL. VERIFICATION OF THESE FORMULAS CARRIED OUT ON THE BINARY MIXT. OF ANILINE CYCLOHEXANE NEAR THE CRIT. POINT, ARE DISCUSSED.

UNCLASSIFIED

USSR

UDC 537.52

GOLUBOVSKIY, YU. B., KAGAN, YU. M., and KOMAROVA, L. L.

"On the Emission of a Continuous Spectrum of Electron Retardation by Atoms in a Positive Argon Discharge Column"

Leningrad, Optika i Spektroskopiya, Vol 34, vyp 2, Feb 73, pp 226-229

Abstract: In the medium pressure region at $p > 1$ torr the emission spectrum of a positive inert-gas discharge column displays a continuous spectrum, whose intensity increases with an increase in pressure. It has been proved that this continuous spectrum is emitted during electron retardation by gas atoms. The expression for the intensity of the continuous spectrum I_ω is

$$I_\omega = nn_a\hbar\omega \int_{\sqrt{\frac{2\hbar\omega}{m}}}^{\infty} \frac{d\sigma(\varepsilon)}{d\omega} vf(\varepsilon)\, dv;$$

where n and n_a are the electron and atom concentrations, $d\sigma(\varepsilon)$ is the cross section of the process in which an electron with energy ε during collision with an atom emits a quantum in the frequency range $\omega - \omega + d\omega$, and $f(\varepsilon)$ is the

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GOLUBOVSKIY, YU. B., et al., Optika i Spektroskopiya, Vol 34, vyp 2, Feb 73, pp 226-229

energy distribution function of the electrons. It has been shown that this cross-section can be expressed through the total cross-section for the elastic scattering of electron by atom, and a formula has been given for the case in which the total elastic scattering cross-section does not depend on the velocity and the energy distribution of the electrons is Maxwellian. This formula can be generalized for the case in which the total cross-section does depend on the velocity. For a Maxwellian distribution of electrons with the temperature T it will take the form

$$I_\omega = 5\cdot 10^{-3}\frac{nn_a}{m^{3/2}c^2}\hbar\,(kT)^{-3/2}\int_{\hbar\omega}^{\infty}\sqrt{\varepsilon-\hbar\omega}\,\sqrt{\varepsilon}\times$$

$$\times\left(2\sigma(\varepsilon-\hbar\omega)+(\varepsilon-\hbar\omega)\,\sigma'(\varepsilon)\right)e^{-\varepsilon/kT}d\varepsilon.$$

This formula was previously used by the authors to find the electron concentration n from the measured intensity I_ω in a positive neon and helium discharge column. However, whereas in helium the energy distribution of slow

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GOLUBOVSKIY, YU. B., et al., Optika i Spektroskopiya, Vol 34, vyp 2, Feb 73, pp 226-229

electrons is Maxwellian at any electron concentration n, in neon and argon the slow electron distribution can be considered Maxwellian only for a rather large electron concentration; i.e., for discharge currents which are not too small. This limitation can be avoided if formula (1) is used and if $f(\mathcal{E})$ is taken to be the following approximate expression for the distribution function valid for any electron concentration n:

$$f(u) = C\left(\frac{m}{2kt}\right)^{3/2} \exp\left[-\int_0^u \frac{1+\gamma_2\frac{u^2}{\bar{\lambda}(u)}}{1+\gamma_1 u\bar{\lambda}(u)}\,du\right].$$

A comparison of the calculated intensity values with experimentally measured values shows satisfactory agreement.

The authors thank A. N. STAROSTIN for advising them of the form for formula (2), and R. I. LYAGUSHCHENKO for discussing the results.

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USSR

UDC 537.53

GOLUBOVSKIY, Yu. B., KAGAN, Yu. M., and KOMAROVA, L. L.

"Atomic Temperatures and the Broadening of Spectral Lines in the Positive Column of a Discharge in Argon"

Leningrad, Optika i Spektroskopiya, Vol 35, No 1, Jul 73, pp 14 - 18

Abstract: The atomic temperature in the positive column of a discharge is valuable information for a variety of purposes. Previous attempts to determine or measure this have been made, but for argon the process was complicated by an attempt to determine a number of factors simultaneously, forcing the use of several simplifying assumptions. The present study involves only the determination of the temperature of atoms in the argon from experimental values of the radial fall of electron concentration and the value of the longitudinal electric field. This narrower approach avoids many difficulties encountered in a complete, theoretical treatment of the discharge parameters.

Measurements were made of the contours of spectral lines at 6965 and 7147 angstroms from an argon discharge.

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GOLUBOVSKIY, Yu. B., et al., Leningrad, Optika i Spektroskopiya, Vol 35, No 1, Jul 73, pp 14 - 18

Tables published by Davis and Vaughan in Astrophysical Journal, Vol 137, page 1302, were used to determine the width of the Lorentz portion of the contour, consisting of the apparatus width and a width related to pressure effects. The apparatus width was independently determined and eliminated. The width due to the interaction with charged particles was calculated on the basis of tables published by Griem in Physical Review, Vol 128, page 515. The results indicated that the observed widening was due to interactions with neutral atoms. The change was found to be a linear function of the concentration of normal atoms on the axis. The result was found to agree fairly well with theoretical values calculated by L. A. Luizova (Candidate's Dissertation, Leningrad State University, 1969).

The agreement of measured and calculated temperatures, as well as the linear relationship with the concentration of normal atoms, indicates the correctness of the calculated temperature.

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USSR UDC 537.535.1

GOLUBOVSKIY, Yu. B., KAGAN, Yu. M., KOMAROVA, L. L., Leningrad State University imeni A. A. Zhdanov

"Parameters of a Positive Column in Argon at Moderate Pressures"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 11, Nov 72, pp 2366-2370

Abstract: The theory of a positive discharge column in inert gases at moderate pressures is briefly outlined, and the results of measurements of the electric and optical parameters of a positive discharge column in argon at pressures from 10 to 80 mm Hg and discharge currents from 5 to 500 ma are presented for a tube radius of 1.2 cm. The measurements are compared with theoretical data.

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USSR UDC 535.9

BYKHOVSKIY, D. G., GOLUBOVSKAYA, S. M., GOLUBOVSKIY, Yu. B., and KAGAN, Yu. M.

"Spectroscopic Study of Plasma Parameters at the Output of a Plasmatron. II"

Leningrad, Optika i Spektroskopiya, No. 5, May 71, pp 836-840

Abstract: The radial change in the parameters of a plasma at the output of a plasmatron was calculated on the basis of measurements of the brightness of spectral lines of ArI and Hα. The measurements were made in pure argon and in an argon-hydrogen mixture. The addition of hydrogen led to a rise in temperature at the axis and to a sharper falling off. The concentration of argon atoms in the center was lowered and they were drawn to the periphery of the arc. Electron concentrations measured on the basis of shift and on the basis of the intensity of spectral lines in pure argon were compared. The measurements are presented in graphical form.

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UDC 537.52+539.186].01

GOLUBOVSKIY, Yu. B., KAGAN, Yu. M., and LYAGUSHCHENKO, R. I.

"Population of Resonance Levels in a Cylindrically Configurated Discharge"

Leningrad, Optika i Spektroskopiya, Vol 31, No 1, Jul 71, pp 22-29

Abstract: The authors have used an approximate method to solve the equation of transport of radiation in the case of cylindrical geometry for large coefficients of absorption k_0R and for a dispersion shape of the spectral line. They found the matrix of the system of algebraic equations approximately equivalent to the initial integral equation; using this it was easy to use a computer for their numerical calculations. When it was possible for them to ignore the quenching of the resonance levels, they were able to find an inverse matrix which allowed them to obtain a solution for various types of excitation functions of the resonance level $\varphi(r)$ and various parameters of the problem without resorting to the computer. By making use of the approximation method of moments, they were able to find a rather simple analytical expression for the concentration of resonance atoms n(r). The authors employ 6 figures and 2 tables to substantiate their findings. The article contains a bibliography of 6 titles.

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1/2 050 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--SPECTROSCOPIC STUDY OF PLASMA PARAMETERS IN THE OUTPUT OF A PLASMATRON. I. RADIAL DISTRIBUTION OF ELECTRON CONCENTRATION IN ARGON

AUTHOR-(03)-GOLUBOVSKAYA, S.M., GOLUBOVSKIY, YU.B., KAGAN, YU.M.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 223-7

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPECTROSCOPY, ARGON, ELECTRON, CONCENTRATION GRADIENT, SPECTRAL LINE, LINE WIDTH, LINE SHIFT, DISTRIBUTION THEORY, FLOW ANALYSIS, GAS FLOW/(U)DFS8 SPECTROGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1781 STEP NO--UR/0051/70/028/002/0223/0227

CIRC ACCESSION NO--AP0112767

UNCLASSIFIED

2/2 056 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0112767
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTRON CONCN. IN AR WAS MEASURED ON THE BASIS OF THE WIDTH AND SHIFT OF THE AR I 7067, 7504, AND 7635 ANGSTROM LINES IN A PLASMATRON AT 100 AND 200 ANGSTROM; THE NOZZLE DIAMS. WERE 3 AND 4 MM, AND THE RATE OF FLOW OF THE GAS WAS 1000-1500 L.-HR. A DFS-8 SPECTROGRAPH (6 ANGSTROM-MM), CROSSED WITH A FABRY-PEROT STANDARD, WAS USED AS A MONOCHROMATOR FOR THE PRELIMINARY DISPERSION. A DISCHARGE AT 1 TORR AND 50 MA WAS USED AS A SOURCE OF NARROW NONSHIFTED LINES. BY BOTH THE WIDTH AND SHIFT, THE SAME MEAN ELECTRON CONCN. VALUES (0.8 TIMES 10 PRIME17-CM PRIME3) WERE OBTAINED. THE RADIAL DISTRIBUTION OF ELECTRON CONCN. IN AR WAS DETD. ON THE BASIS OF SPECTRAL LINE SHIFT; THIS METHOD IS MORE SUITABLE, SINCE NO ELIMINATION OF APP. AND DOPPLER CONTOURS IS NEEDED.

UNCLASSIFIED

USSR UDC 576.851.48.097.29

SMIRNOVA, V. I., GUBENKO, T. L., and GOLUBTSEVA, M. V., Agricultural Institute, University, and Scientific Research Institute of Virology and Epidemiology, Odessa

"The Hemolytic and Cytotoxic Activity of Escherichia coli Exotoxins"

Kiev, Mikrobiologichniy Zhurnal, Vol 35, No 4, Jul/Aug 73, pp 456-460

Abstract: On centrifuging of a 24 hr Hottinger broth culture of E. coli isolated from a patient with a urological disease, the exotoxins from the supernatant liquid were concentrated by precipitation with trichloroacetic acid. Electrophoresis of the exotoxins resulted in the separation of a component that exhibited hemolytic associated with cytotoxic activity from another component which had proteolytic activity and was toxic to animals. The hemolytic and cytotoxic activity of the first component was due to a thermally labile protein substance that did not dialyze. In view of the fact that addition of magnesium salts, calcium salts, or cysteine did not alter the hemolytic and cytotoxic activity, one could conclude that this activity was not due to lecithinase C.

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1/2 023 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SOME TYPES OF HORIZONTAL INTERACTION PROVIDING NORMAL VISION OF IMAGES MOVING ALONG THE RETINA, MODELLING OF SOME HUMAN VISUAL FUNCTIONS

AUTHOR-(02)-BONGARD, M.M., GOLUBTSOV, K.V.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 15(2): 361-373. ILLUS. 1970

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MODEL, VISUAL ACTIVITY, VISION, RETAIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605008/B05 STEP NO--UR/0217/70/015/002/0361/0373

CIRC ACCESSION NO--AP0139940

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0139940
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MODEL IS DESCRIBED WHICH AT THE SAME TIME HAS NORMAL PERCEPTION OF MOVING OBJECTS AND COMPLETE ABSENCE OF THE PERCEPTION OF STATIONARY IMAGES. A NEW TYPE OF HORIZONTAL INTERACTION BETWEEN THE CHANNELS HAD TO BE USED TO COMBINE THESE PROPERTIES. IT WAS PERFORMED BY ONE SIDED PROPAGATING SIGNAL, WHICH WAS WORKED OUT BY NONLINEAR TRANSFORMATION OF BRIGHTNESS GRADIENT. THE MODEL AUTOMATICALLY REPRODUCED SOME PROPERTIES OF HUMAN VISION, SUCH AS, FOR INSTANCE, THE FALL OF VISION KEENNESS AT LOW BRIGHTNESS. MACH EFFECT, MANY PECULIARITIES OF THE PERCEPTION OF STATIONARY IMAGES.
FACILITY: INST. PROBL. INFORM. TRANSM., ACAD. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--LIGHT TRANSMISSION OF FLUOROPHOSPHATE GLASSES AS A FUNCTION OF SYNTHESIS CONDITIONS -U-
AUTHOR-(04)-GOLUBTSOV, L.A., KHALILEV, V.D., YEVSTROPYEV, K.S., DOLADUGINA, V.S.
COUNTRY OF INFO--USSR

SOURCE--IZV. SSSR. NEORGANICHESKIYE MATERIALY, VOL 6, NO 5, MAY 70, PP 924-927
DATE PUBLISHED----MAY70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LIGHT TRANSMISSION, CHEMICAL STABILITY, GLASS CRYSTALLIZATION, PHOSPHATE GLASS, FLUORIDE, GLASS COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1044 STEP NO--UR/0363/70/006/005/0924/0927

CIRC ACCESSION NO--AP0134746

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0134746
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDIED THE EFFECT OF THE DIGESTION CONDITIONS ON THE TRANSPARENCY AND HOMOGENEITY OF FLUOROPHOSPHATE GLASSES OF THE FOLLOWING COMPOSITION (WT PERCENT): AL(PO SUB3) SUB3, 30; BAF SUB2, 60; CAF SUB2, 10. THIS GLASS SHOWS VERY HIGH CHEMICAL STABILITY AND COMPARATIVELY LOW CRYSTALLIZATION ABILITY. IT WAS DETERMINED THAT THE PRESENCE OF OXYGEN AND WATER VAPORS IN THE GASEOUS MEDIUM ABOVE THE ALLOY DURING DIGESTION OF FLUOROPHOSPHATE GLASSES LEADS TO CONSIDERABLY POORER TRANSPARENCY IN THE ULTRAVIOLET AND INFRARED SPECTRAL REGIONS, AND TO POORER HOMOGENEITY. HOMOGENEOUS GLASSES WITH HIGH TRANSPARENCY MAY ONLY BE O-I OBTAINED IN AN INERT ATMOSPHERE. FACILITY: LENINGRAD TECHNOLOGICAL INSTITUTE IMENI LENSOVET.

UNCLASSIFIED

Glass and Ceramics

USSR 6 UDC 546.185'16:666.1

GOLUBTSOV, L. A., KHALILEV, V. D., YEVSTROP'YEV, K. S., DOLADUGINA, V. S., Leningrad Technological Institute Imeni Lensovet

"Light Transmission of Fluorophosphate Glasses as a Function of Synthesis Conditions"

Moscow, Neorganicheskiye Materialy, Vol 6, No 5, May 70, pp 924-927

Abstract: The authors studied the effect of the digestion conditions on the transparency and homogeneity of fluorophosphate glasses of the following composition (wt%): $Al(PO_3)_3$--30; BaF_2--60; CaF_2--10. This glass shows very high chemical stability and comparatively low crystallization ability. It was determined that the presence of oxygen and water vapors in the gaseous medium above the alloy during digestion of fluorophosphate glasses leads to considerably poorer transparency in the ultraviolet and infrared spectral regions, and to poorer homogeneity. Homogeneous glasses with high transparency may only be 1/1 obtained in an inert atmosphere.

USSR

UDC 621.372.8

GOLUBTSOV, M. G., KHLEBNIKOV, M. N.

"Dynamic Constants of a Parametrically Excited Magnetostrictive Medium"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2047-2054

Abstract: The equations of state of a polarized ferromagnet are generalized to the case of a magnetostrictive medium with parameters which are variable in time. The dynamic constants of the medium were analyzed for quasistationary electromagnetic oscillations. Some possibilities for reducing the number of independent elastic and magnetostrictive dynamic constants in the case of longitudinal magnetic pumping are discussed. In a medium with pumping, violation of the law of conjugacy of the mechanical stresses in the presence of interaction of the oscillations on one operating frequency takes place basically as a result of the magnetic field of the signal which is characteristic for a passive magnetoelastic medium [K. B. Vlasov, Izv. AN SSSR, Ser. fiz., No 22, 10, 1958]. The asymmetry of the tensor of the mechanical stresses formed during the process of parametric frequency conversion is created not only by the magnetic field of the signal, but it is directly connected with the elastic deformations and rotations in the medium. With parametric frequency conversion the elastic properties of the medium have sharply expressed anisotropy. The ΔE-effect essentially depends on the orientation of the mechanical stresses in

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002200930008-7"

USSR

GOLUBTSOV, M. G., et al., Radiotekhnika i elektronika, Vol 17, No 10, 1972, pp 2047-2054

the medium with respect to the vector of the polarizing field and pumping. The magnetoelastic properties of the medium connected with the effects of rotation and magnetostriction are also anisotropic, and therefore in a uniform pumping field the periodic variations of the elastic properties of the medium are different in different directions.

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USSR UDC 621.396.6--181.5 (088.8)

BARANOV, A.I., BATSKHAURI, V.D., VOSKOBOYNIKOV, I.I., GAVRILOV, R.A., GALYATKIN, V.P., GOLUBTSOV, M.S., ZAKHARKOVSKIY, M.B., ZALIPSKIY, A.I., ZLOTIN, V.A., KAZATSKER, L.I., LAGUTKIN, G.V., LARIONOV, YU. S., PREOBRAZHENSKIY, S.P., MALKIN, D.L., RAMENSKIY, I.V., SIMONOVA, I.S., TIKHOMIROV, B.S., FISHEL', I.SH., SHULMAN, M.M.

"Device For Deposition Of Multilayer Coverings In A Vacuum"

USSR Author's Certificate No 279291, filed 16 June 68, published 30 Nov 70 (from RZh--Radiotekhnika, No 9, Sep 1971, Abstract No 9V272P)

Translation: A device proposed for deposition of multilayer coverings in a vacuum is fulfilled in the form of a number of successively mounted independent operating chambers supplied with evaporators, heaters, and an exhaust system. The device contains a mechanism for transporting substrates, a mechanism for loading and unloading, and a drive mechanism. With the object of increasing the reliability of the device and improving the quality and reproducibility of the coverings deposited, outside of the area of the arrangement of operating chambers and parallel to it a supplementary vacuum chamber is installed, which serves for the deposition in it of the transporting mechanism [illegible] which communicates with each of the operating chambers by means of vacuum-tight [illegible] transfer windows located on the side wall

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USSR

BARANOV, A. I., et al., USSR Author's Certificate No 279291, filed 16 June 68, published 30 Nov 70 (from RZh--Radiotekhnika, No 9, Sep 1971, Abstract No 9V272P)

of the supplementary chamber at places for connection to it of the operating chambers. Each of the operating chambers or a group of them is provided with an individual system of high-vacuum pumping.

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USSR

UDC 547.245'118.07

KAMENSKIY, A. B., OGAYDZHAN, E. P., PONOMAREV, V. V., GOLUBTSOB, S. A., and IGNATOVICH, YU. A.

"A Method of Making Organyl Halosylyl Phosphines"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 345167, Div C, filed 31 Jul 70, published 14 Jul 72, p 97

Translation: This Author's Certificate introduces a method of making organyl halyl phosphines by reacting hydrogen-containing halosilanes with chlorophosphines in an organic solvent with subsequent isolation of the goal product by conventional methods. As a distinguishing feature of the patent, the process is simplified by using organyl chlorophosphines as the chlorophosphines, and carrying out the process in the presence of a hydrogen chloride acceptor such as triethylamine.

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USSR

UDC 547.558.1

CHERNYSHEV, YE. A., AKSENOV, V. I., PONOMAREV, V. V., GOLUBTSOV, S. A., BUGER-ENKO, YE. F.

"Organophosphorus Heterocyclic Compounds. III. Synthesis and Conversions of 10-chloro-10-phospha-9-oxa-9,10-hydrophenanthrene"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 93-96

Abstract: The method of intramolecular ring formation was used on o-xenyloxy-dichlorophosphine in the liquid phase in the presence of $AlCl_3$ to obtain 10-chloro-10-phospha-9-oxa-9,10-dihydrophenanthrene. The chemical conversions of 10-chloro-10-phospha-9-oxa-9,10-dihydrophenanthrene take place both with conservation of the tricyclic structure (hydrolysis, addition of sulfur, methoxylation) and with splitting of the ring containing the P-O bond (Grignard methylation). Some physical characteristics, the percentage yield and formulas are tabulated and the experimental procedures for synthesis are presented for the mentioned compounds.

USSR UDC 678.84

KAMENSKIY, A. B., OGAYDZHAN, E. P., PONOMAREV, V. V., and GOLUBTSOV, S. A.

"A Method of Synthesizing Organophosphorus Compounds"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 36, 1971, Author's Certificate No 322346, Division C, filed 31 Jul 70, published 30 Nov 71, p 55

Translation: This Author's Certificate introduces: 1. A method of synthesizing organophosphorus compounds by interacting trichlorosilance with organophosphines. As a distinguishing feature of the patent, compounds containing the P-P bond in the main chain are synthesized by using organyldichlorophosphines as the organophosphines, and carrying out the reaction in the presence of a tertiary amine in an organic solvent. 2. A modification of this method distinguished by the fact that the tertiary amine is taken in quantities from catalytic to equimolecular.

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1/2 012 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--ALKYL, ARYL, CHLOROSILANE FORMATION DURING THE DIRECT REACTION OF ALKYL, ARYL, CHLORIDES WITH SILICON. 7. CHLORINE TRANSFER MECHANISM IN

AUTHOR-(05)-TORETSKAYA, R.A., GOLUBTSOV, S.A., ANDRIANOV, K.A., MOSIN, A.M., PASTUKHOVA, Z.V.

COUNTRY OF INFO--USSR

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SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 802-8.

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, CHLORINATED ORGANIC COMPOUND, SILANE, BENZENE DERIVATIVE, ZINC COMPOUND, CADMIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1305 STEP NO--UR/0062/70/000/004/0802/0808

CIRC ACCESSION NO--AP0134479

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134979

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM EXAMN. OF THE DIRECT SYNTHESIS OF CHLOROSILANES OVER A CU,SI MASS, WHICH WAS EXAMD. REPEATEDLY DURING THE REACTION FOR ITS CONTENT OF CO, CU AND ZN, IT WAS SHOWN THAT SYNTHESIS OF PHENYLCHLOROSILANES IS DIRECTLY THE RESULT OF FORMATION OF CUCL IN THE REACTION OF PHCL WITH CU, FOLLOWED BY REGN. BY SI. THE CL TRANSFER TO CU, THEN TO SI, OCCURS AS A GENERAL SYMPTOM OF DIRECT SYNTHESIS OF CHLOROSILANES IN GENERAL. PROMOTERS IN THE FORM OF ZN OR CO OR THEIR CHLORIDES IN THE REACTION MASS APPEAR TO FUNCTION THROUGH THE INTERMEDIATE FORMATION OF MONOCHLORIDES OF ZN AND CO AND TRANSFER OF THE CL FROM CU TO THESE. THIS APPEARS TO BE MORE FAVORABLE ENERGETICALLY THAN IS THE FORMATION OF CUCL FROM CU PROPER AND PHCL. NUMEROUS KINETIC AND YIELD DATA WERE SHOWN GRAPHICALLY.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--SYNTHESIS OF
1,5,DIALKOXY,1,3,5,TRIMETHYL,1,3,5,TRIPHENYLTRISILOXANES -U-

AUTHOR-(03)-KUZNETSOVA, A.G., IVANOV, V.I., GOLUBTSOV, S.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 706

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SILOXANE, ORGANIC SYNTHESIS, AZEOTROPE, CATALYST, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0867 STEP NO--UR/0079/70/040/003/0706/0706

CIRC ACCESSION NO--AP0124530
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--23OCT70

2/2 012

CIRC ACCESSION NO--AP0124530

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CYCLO,(MEPHSIO) SUB3 (I) IS CONVERTED VERY RAPIDLY IN ALC. INTO A 1:1 ADDUCT OF TYPE RO(MEPHSIO) SUB3 R AND H SUB2 O; CLEAVAGE OF THIS ADDUCT WITH 2 MOLES ROH TO A DISPERSED MIXT. OF RO(MEPHSIO) SUB2 R AND ITS ANALOGS TAKES PLACE MANY HUNDREDS OF TIMES MORE SLOWLY. THIS MADE POSSIBLE A DIRECT SYNTHESIS OF THE FORMER PRODUCTS AS LONG AS H SUB2 O IS DIRECTLY REMOVED FROM THE SITE, BEST AS AN AZEOTROPE WITH ROH OR ROH AND C SUB6 H SUB6. THUS, 40.9 G I AND 35 ML ABS. ETOH HEATED WITH 25 ML C SUB6 H SUB6 AND 0.01-02 ML CONCD. HCLO SUB4 CATALYST (HCL OR ALUMINOSILICATE MAY BE USED ALSO) SO AS TO EFFECT CONTINUOUS DISTN. OF THE AZEOTROPE CONTG. H SUB2 O GAVE 60-75PERCENT ETO(MEPHSIO) SUB3 ET, B SUB1. 179-80DEGREES, D PRIME20 1.0583, N PRIME20 SUBD 1.5150; SIMILARLY WERE PREPD.: 75-86PERCENT PRO(MEPHSIO) SUB3 PR, B SUB1-2 191-6DEGREES, 1.0438, 1.5121; 75-85PERCENT ISO-PRO(MEPHSIO) SUB3 CHME SUB2, B SUB1 179-80DEGREES, 1.0384, 1.5089; 75-85PERCENT BUO(MEPHSIO) SUB3 BU, B SUB1 206-8DEGREES, 1.0294, 1.5080; 75-85PERCENT ISO-BUO(MEPHSIO) SUB3 CH SUB2 CHME SUB2, B SUB1-2 192-4DEGREES, 1.0237, 1.5079; AND 80-90PERCENT MEETCHO(MEPHSIO) SUB3 CHMEET, B SUB1-2 188-94DEGREES, 1.0287, 1.5080.

UNCLASSIFIED

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UR 20 25

AUTHOR-- YU. GOLUBTSOV, CORRESPONDENT

TITLE-- THE TIN OF THE AMUR REGION

NEWSPAPER-- TRUD, JANUARY 11, 1970, P 1, COLS 4-5

ABSTRACT-- THE KOMSOMOL,SK-ON-AMUR GEOLOGICAL EXPEDITION HAS DISCOVERED A NEW TIN DEPOSIT, "LUNNOYE", THE FOURTH ONE IN THE KOMSOMOL,SK REGION. THE REGION HAS TWO TIN CONCENTRATE PRODUCING FACTORIES.

1/1

19571619

Corrosion

UDC 546.821:542.61

USSR

KOIRNLOV, I. I., GOLUBTSOVA, R. B., and SAVVATEYEVA, S. N., Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences USSR

"Study of Solubility of Titanium Suboxides and Metallic Titanium in Various Chemical Media"

Moscow, Neorganicheskiye Materialy, Vol 9, No 8, Aug 73, pp 1450-1451.

Abstract: This work studies the solubility of the suboxides Ti_3O, Ti_6O and metallic titanium in various chemical media, of interest from the standpoint of their stability and corrosion resistance, particularly in corrosive media. The alloys studied were prepared, annealed at 400-600° C and cooled in air. They were then dissolved in various chemical media at room temperature. After the experiment, the insoluble powder sediment was filtered, washed, the filtrate was evaporated down to a certain volume and the titanium content was determined. A table of solubilities of suboxides and metallic titanium in the chemical media tested is presented. Test media were H_2SO_4, HCl, HNO_3 and H_3PO_4.

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USSR

UDC 669.295.018.9.4(088.8)

GOLUBTSOVA, R. B., and YAROSHENKO, A. D.

"Electrolyte for Isolation of Metallide Phases in Alloys of Titanium"

USSR Author's Certificate No 293058, filed 11/11/69, published 11/03/71. (Translated from Referativnyy Zhurnal Metallurgiya, No 3, 1972, Abstract No 3G160P)

Translation: An electrolyte is proposed for isolation of metallide phases in alloys of Ti, containing HCl and methanol. To achieve selective isolation of the Ti-Fe phase, perchloric acid is introduced to the electrolyte with the following ratio of components in Ml/l): HCl 45-55, perchloric acid 10-15, methanol 1,000. The process of electrolytic purification of Ti alloys is performed at room temperature and D=0.05 a/cm^2. An example is presented.

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USSR UDC 537.29

GOLUBTSOVA, R. B., and SAVVATEYEVA, S. M., Moscow

"On the Solubility and Electrochemical Behavior of the Phases in Titanium-Based Alloys"

Moscow, Fizika i Khimiya Obrabotki Metallov, No 1, Jan-Feb 71, pp 137-140

Abstract: The δ-phase isolation in titanium-based alloys was investigated. A scientific approach to the selection of the electrolyte for the separation of α- and δ-solid titanium solutions, based on the difference in the dissolving rate of the phase and the α-solid solution, is suggested. A regular relationship between the solubility and the electrochemical behavior of the phases was established. On the basis of the investigation, a scientifically substantiated selection of the electrolyte which provides a selective separation of the phases in alloys can be made.

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--SPECTROPHOTOMETRIC DETERMINATION OF MICROGRAM AMOUNTS OF CHROMIUM IN ANODIC POWDERS -U-
AUTHOR-(02)-GOLUBTSOVA, R.F., YAKOSHENKO, A.D.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(2), 147-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHROMIUM, TRACE ANALYSIS, SPECTROPHOTOMETRIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1882 STEP NO--UR/0032/70/036/002/0147/0148

CIRC ACCESSION NO--AP0118844
UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0113844

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A 0.01-G SAMPLE IS DISSOLVED IN 15 ML H SUB2 SO SUB4 (1:2) CONTG. SEVERAL DROPS OF HNO SUB3 (D. 1.4). THE SOLN. IS EVAPD. 3 TIMES AND DILD. TO 50 ML WITH H SUB2 O. A 1-5 ML ALIQUOT IS MIXED WITH 2 ML 10PERCENT NACLO SUB4, 5 ML 5PERCENT NADAC, 1 ML 4PERCENT NAF, AND, AFTER ADJUSTING THE PH TO 5-5 WITH ALKALI OR HOAC, 2 ML OF 0.1PERCENT AQ. PYROCATECHOL VIOLET. THE SOLN. IS DILD. TO 25 ML, INCUBATED 20 MIN AT 40DEGREES, AND THE ABSORPTION MEASURED AT 605 NM. SENSITIVITY OF THE REACTION IS 0.04 MUG-ML. TI AND V IN 50, NI IN 30, AND MO IN 15 FOLD EXCESS DO NOT INTERFERE WITH THE DETN. FE IS MASKED WITH ASCORBIC ACID AND EXCESS OF AL AND TI WITH F PRIME NEGATIVE. CL PRIME NEGATIVE, NO SUB3 PRIME NEGATIVE, AND SO SUB4 PRIME NEGATIVE NEGATIVE INTERFERE WITH THE DETN. IN CONCNS. GREATER THAN 10 MG-ML.

FACILITY: INST. MET. IM. BAIKOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--DETERMINATION OF MOLYBDENUM IN HYDROMETALLURGY PRODUCTS BY TITRATION WITH VANADATE -U-

AUTHOR-(03)-GOLUBTSOVA, Z.G., LEBEDEVA, L.I., YAKOVLEVA, N.F.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(2), 150-1

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HYDROMETALLURGY, MOLYBDENUM, VANADATE, TITRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1053 STEP NO--UR/0032/70/036/002/0150/0151

CIRC ACCESSION NO--AP0123046

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123046

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MOLYBDATE IS REDUCED WITH N SUB2 H SUB4 AND TITRATED WITH 0.01N NH SUB4 VO SUB3 IN MEDIUM OF H SUB3 PO SUB4 WITH FERROIN INDICATOR. DISSOLVE 0.25 G MO-W CONC. BY TREATING IT WITH 20 ML HOT HNO SUB3 AND ADDING LATER 10 ML HCL AND 4 ML H SUB2 SO SUB4. HEAT UNTIL H SUB2 SO SUB4 FUMES ARE PRODUCED, DIL. WITH 100 ML H SUB2 O, NEUTRALIZE WHEN BOILING WITH NH SUB4 OH AND ADD 10 ML IN EXCESS, LET THE HYDROXIDES COAGULATE AT ELEVATED TEMP., COOL, AND FILTER. DIL. THE FILTRATE TO 250 ML. NEUTRALIZE A 25 ML ALIQUOT WITH 7N H SUB2 SO SUB4, ADD 50 ML 1:4 HCL AND 20 MG N SUB2 H SUB4.HCL, BOIL 5 MIN, ADD 13 ML H SUB2 SO SUB4 AND 5 ML H SUB3 PO SUB4, COOL, AND TITRATE WITH 0.01N NH SUB4 VO SUB3 BY USING FERROIN INDICATOR. THE BLANK CORRECTION IS USUALLY 0.1-0.2 ML. FOR SAMPLES WITH 26-60PERCENT MO AND 1-17PERCENT WO SUB3, THE STD. DEVIATIONS WERE 0.05-0.25PERCENT. FACILITY: LENINGRAD. GOS. UNIV., LENINGRAD, USSR.

UNCLASSIFIED

USSR UDC 621.762.52:669.018.25

KISLYY, P. S., GOLUBYAK, L. S., and ZAVERUKHA, O. V., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Consumable-Electrode Laboratory Furnace and Obtaining Melted Specimens of Titanium Carbide"

Kiev, Poroshkovaya Metallurgiya, No. 9, Sep 70, pp 94-98

Abstract: This paper concerns methods of obtaining cast ingots of titanium carbide in an especially designed consumable-electrode electric arc furnace. The furnace uses two electrodes, one of which is the graphite crucible and the other -- the consumable rod. Two methods of melting are proposed and described in detail. The heat losses in the furnace are low and the operating voltage in melting the titanium carbide is 30 v. An increase in the latter to 40-45 v in the melting chamber produces a space discharge; this disperses the thermal energy of the discharge over the larger area of the electrode and the process of melting is terminated. A decrease to 25 v retards the melting. The composition of the melted specimens is close to stoichiometric. During melting, titanium carbide is decomposed, liberating the free oxygen which dissolves in the carbide on subsequent high-temperature annealing. The furnace described makes it possible to produce almost nonporous parts.

1/1

USSR UDC 669.046.558.28

KISLYY, P. S., GOLUBYAK, L. S., and ZAVERUKHA, O. V., Institute of Problems of the Material Science, Academy of Sciences Ukrainian SSR

"Changes in the Structure and Properties of Melted Titanium Carbide on Annealing"

Kiev, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 78-82

Abstract: Melted titanium carbide features stable electrophysical properties which makes its use preferable to sintered carbide. However, these properties cannot be reproduced over its volume due to rapid solidification of the melt, impurity liquation, and carbon redistribution in the crystallization zone. The objective of this paper was to study changes in both the properties and microstructure of melted titanium carbide on heating for producing a material with both stable and reproducible properties. A dependence is described of the electrophysical properties of titanium carbide on the hold-

USSR

KISLYY, P. S., et al, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 78-82

ing period at various temperatures. The annealing was performed at 1000, 1400, 1600, 2000, and 2000°C. Under the effect of thermal stresses, and rapid cooling following high-temperature heating, titanium carbide exhibits plastic flow which is manifested in the appearance of slip bands with the release of excess carbon on them. With an increase in annealing time, the number of these bands decreases while their size increases. Annealing at 1400--1600°C brings about the formation of large equilibrium grains of titanium carbide and the release of excess carbon along their boundaries. Annealing at 2000--2200°C produces a microstructure with large equilibrium grains. The stabilization of thermoelectric characteristics takes place after 4 hours of annealing at 1600--2200°C.

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USSR

UDC 621.762.5.001

KISLYY, P. S., and GOLUBYAK, L. S., Institute of Problems of Material Science, Academy of Sciences Ukr SSR

"Sintering Titanium Carbide With Isothermal Heating"

Kiev, Poroshkovaya Metallurgiya, No 1 (97), Jan 71, pp 23-26

Abstract: A study was made of the shrinkage of titanium carbide samples under conditions of isothermal heating during the effect of ultrasound (the oscillation amplitude A = 12 microns, the pulse length τ = 40 microseconds, and the generation frequency f = 9,000 sec^{-1}).

During the initial period of isothermal holding the shrinkage of titanium carbide samples in an ultrasonic field is more intense than that of samples not subjected to ultrasound. With an increase in the holding time, the shrinkage of the samples sintered in the ultrasonic field decreases. The grain size of the sample sintered in the ultrasonic field is smaller, i.e., the ultrasound inhibits the process of collective recrystallization of titanium carbide. Ultrasound also causes loosening of the grain boundaries of titanium carbide.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002200930008-7"

USSR

KISLYY, P. S., and GOLUBYAK, L. S., Poroshkovaya Metallurgiya, No 1 (97), Jan 71, pp 23-26

It is possible that the laws of shrinkage of plastic materials in an ultrasonic field differ significantly from the laws of shrinkage of titanium carbide. However, that activation of sintering cannot be explained by a change in mobility of the atoms under the effect of sonic vibrations. The mechanism of effect of the ultrasonic field is discussed in some detail, and it is concluded that probably as a result of ultrasound the boundaries of brittle materials cannot be sources for vacant sites inasmuch as with a sign-variable load in the contact sections a flow of vacant sites is established whose direction depends on the sign of the load. This leads to the occurrence of oscillatory motion of the vacant sites at the boundary and to disintegration of the lattice.

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USSR

GOLUBYEV, N. I.

"Age-related Peculiarities of Phosphorus Metabolism in Certain Sheep Bones"

Byul. VNII fiziol. i biokhimii s.-kh. zhivotnykh (Bulletin of All-Union Scientific Research Institute of the Physiology and Biochemistry of Agricultural Animals), 1970, vyp. 2(16), pp 38-40 (English summary)(from Rzh-Biologicheskaya Khimiya, No 2, 25 Jan 71, Abstract No 2F1351 from conclusions)

Translation: The phosphorus content of the sheep skeleton undergoes significant variations with age. The minimal amount of phosphorus in the bones is noted during the early postnatal period, but by the age of 12 months bone phosphorus content increases significantly. The phosphorus metabolism rate in the bones declines with age. The intensity of phosphorus metabolism in the skeleton depends on the anatomical position of the bones. A high rate of phosphorus metabolism is characteristic of bones of the spine, and the lowest rate is in diaphyses of the femur. Ribs and skull bones occupy an intermediate position.

1/1

GOLUBA, M.

So: JPRS 54304
23 OCT 71

UDC: 619,146-006.6-07:61...
008.931:577.152.07

DIAGNOSIS OF CANCER OF THE CERVIX UTERI ON THE BASIS OF HISTOCHEMICAL INVESTIGATION OF HYDROLYTIC ENZYMES

Article by M. Goluba, Medical Academy, Wroclaw; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 8, 1971, pp 11-13]

A study was made of function and distribution of hydrolases (neutral, alkaline and acid phosphatase, esterase, β-glucuronidase, γ-glutamine transpeptidase, and leucine aminopeptidase) during growth, maturation, and differentiation of squamous and glandular epithelium of the cervix uteri under normal and pathological conditions (hyperplasia, precancer states, intraepithelial and invasive carcinoma).

The cervix is a very convenient object for investigation because of the rather marked processes of physiological maturation of epithelium in it and of its constant renewability, as well as the possibility of good clinical observation of changes by means of copescopy with which purposeful biopsies can be performed.

Biopsy material from the uterus of women ranging in age from 24 to 48 years was studied. Specimens were taken in the first half of the menstrual cycle. A study was made of precancer states (different types of ulcers, inflammatory changes, polyps, atypical hyperplasia of multilayer squamous epithelium with impaired cornification), as well as of carcinoma of the cervix uteri (intraepithelial, squamous cell with varying degrees of invasion, anaplastic, and glandular). Normal cervical mucosa served as the control material.

The process of physiological renewal of multilayer squamous epithelium is related to moderate hydrolase activity which, as the epithelium is differentiated diminishes or disappears, depending on the type of enzyme. Differentiation of glandular epithelium is related to increase in activity of the enzymes studied.

Precancer states which are not associated with significant morphological changes in the epithelium, as compared to normal, do not differ with reference to activity and localization of hydrolases. High hydrolase activity in structures where cellular proliferation prevails considerably over cellular maturation is indicative of involvement of hydrolases in processes of renewal of

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USSR UDC 612.015.31:546.791]-088.1

SADIKOVA, N. M., POLONSKAYA, Ye. K., and GOLUTVINA, M. M.

"An Express Method for Determining Natural Uranium in Biological Substrates"

Moscow, Meditsinskaya Radiologiya, No 2, 1970, pp 65-69

Abstract: An express method for determining uranium in urine, that is specific, rapid, and simple, is proposed. It does not require the preliminary removal of interfering admixtures or other lengthy chemical procedures, thus reducing the amount of uranium lost in the course of analysis. The method is based on thermal destruction of small portions of urine (0.1-1 ml), fusing the residues with a fluoride mixture (NaF+LiF), and determining the intensity of fluorescence of the melt. Though slightly less sensitive than the extraction method, it is more or less equal to it in accuracy. The proposed method is also suitable for determining uranium in soft tissues and in feces.

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Acc. Nr: AP0034680 Ref. Code: UR 0241

PRIMARY SOURCE: Meditsinskaya Radiologiya, 1970, Vol 15, Nr 2, pp 65-69

Sadikova, N. M.; Polonskaya, Ye. K.; Golutvina, M. M.

Summary

The method of determining uranium in the urine is based on the thermic destruction of small quantities of the urine (1 ml), fusion of remnants with a fluoride mixture and evaluation of the activity of the alloy fluorescence. The sensitivity of the method is $3 \cdot 10^{-9}$ g/l of urine, the loss coefficient — 1.0 ± 0.15. The method is simple and therefore is suitable for serial investigations. The authors discuss the possibility of using direct instrumental method for determining the uranium content in the feces and tissues. The article gives the values of coefficients of losses, the sensitivity and accuracy of determination.

D.A.

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REEL/FRAME 02

19711385

USSR UDC 632.95 1

STONOV, L. D., ZHIRMUNSKAYA, N. M., TROFIN, V. P., GOLYADKINA, A. G., and BOROVIKOVA, L. N.

"Herbicidal Activity of Atrazine and Simazine as a Function of the Physical and Chemical Properties of the Preparations"

Vsb. Khim. Sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 201-209 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N458)

Translation: When the moisture content of the soil was fairly high, the degree of dispersion of particles of atrazine and simazine had no effect on their herbicidal activity. Changes in the concentration of auxiliary material OP-7 and sulfite-alcohol residues from 3 to 25% and also the sorption capacity had no effect on the herbicidal activity of the chemicals. The best wettability for powdered preparations of atrazine and simazine and the optimum stability of aqueous suspensions were observed when the specific surface was 15,000-20,000 sq. cm per gram.

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1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--COMPARISON OF CHARACTERISTICS OF TRANSDUCERS MADE OF DIFFERENT MAGNETOSTRICTIVE MATERIALS -U-

AUTHOR-(03)-VALUYEV, V.N., GANEVA, L.I., GOLYAMINA, I.P.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, AKUSTICHESKIY ZHURNAL, VOL 16, NO 1, 1970, PP 32-36

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRIC TRANSFORMER, NICKEL, COBALT IRON ALLOY, IRON ALUMINUM ALLOY, FERRITE, MAGNETOSTRICTIVE MATERIAL, ULTRASONIC EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0287 STEP NO--UR/0046/70/016/001/0032/0036

CIRC ACCESSION NO--AP0106928

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0106928

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMPARATIVE STUDY HAS BEEN MADE OF TRANSFORMERS MADE OF NICKEL, PERMENDUR (IRON COBALT ALLOY), ALFER (POSSIBLE, AN ALUMINUM IRON ALLOY), AND FERRITE WITH CORES OF IDENTICAL FORM AND DIMENSIONS. THE OPERATING REGIMES OF THE TRANSFORMERS CORRESPONDED TO THEIR USE IN ULTRASONIC TECHNOLOGICAL DEVICES OF LOW POWER. THE EMITTERS WERE COMPARED BOTH BY VALUE OF ELECTROACOUSTIC EFFICIENCY FOR LOADING ON LIQUID AND FOR EFFICIENCY IN CONDITIONS OF NEGLIGIBLY SMALL LOADS. THE CORES OF THE EMITTERS MADE OF DIFFERENT MATERIALS WERE IDENTICAL IN SHAPE AND SIZE. THE REXONANCE FREQUENCIES WERE IN THE RANGE 23 TO 28 KILOHERTZ, DIFFERING IN THEIR DEPENDENCE ON THE DIFFERENCE IN VALUE OF THE ELASTIC CONSTANTS. THEY WERE ASSEMBLED FROM SHEETS OF NICKEL 0.1 MM THICK, AND OF PERMENDUR AND ALFER SHEETS 0.23 MM THICK. THE THICKNESS OF THE ENSEMBLE WAS 20 MM. THE FERRITE CORES WERE MONLITHIC. ASSEMBLY OF THE CORES MADE OF NICKEL AND PERMENDUR WAS CARRIED OUT WITH HEAT TREATMENT ACCORDING TO THE STANDARD SET FOR INDUSTRIAL EMITTERS AND WITH SUBSEQUENT IMPREGNATION WITH EPOXY RESIN BASED CEMENT.

UNCLASSIFIED

USSR

UDC 534.232

VALUYEV, V. N., GANEVA, L. I., and GOLYAMINA, I. P., Acoustics Institute of the USSR Academy of Sciences

"Comparison of Characteristics of Transducers Made of Different Magnetostrictive Materials"

Moscow, Akusticheskiy Zhurnal, Vol 16, No 1, 1970, pp 32-36

Abstract: A comparative study has been made of transformers made of nickel, Permendur [iron-cobalt alloy], Alfer [possibly, an aluminum-iron alloy], and ferrite with cores of identical form and dimensions. The operating regimes of the transformers corresponded to their use in ultrasonic technological devices of low power. The emitters were compared both by value of electroacoustic efficiency for loading on liquid and for efficiency in conditions of negligibly small loads.

The cores of the emitters made of different materials were identical in shape and size. The resonance frequencies were in the range 23 to 28 kilohertz, differing in their dependence on the difference in value of the elastic constants. They were assembled from sheets of nickel 0.1 mm thick, and of Permendur and Alfer sheets 0.23 mm thick. The thickness of the

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002200930008-7"

USSR

VALUYEV, V. N., et al., Akusticheskiy Zhurnal, Vol 16, No 1, 1970, pp 32-36

ensemble was 20 mm. The ferrite cores were monlithic. Assembly of the cores made of nickel and Permendur was carried out with heat treatment according to the standard set for industrial emitters and with subsequent impregnation with epoxy-resin based cement.

UDC 621.317.443

USSR

GOLYAN, S. F.

"Analysis of the Results of Field Intensity Measurements on the Short Wave Moscow-Molodezhnaya (Antarktida) Radio Line"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 1 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972, pp 287-289 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A424)

Translation: As the result of an analysis of the experimental results in the measurement of the field intensity of a transmitter (City of Moscow) in Antarktid to the Molodezhnaya station, an empirical frequency dependence of the field amplitude was established in the form $E(f) = E(f_0) - a(f - f_0)$, $a > 0$, where $E(f)$ is the field intensity at frequency f, in relation to 1 μV/m (in dB), $E(f_0)$ is the field intensity at the optimal value (dB), and a is a proportionality factor (dB/MHz^2). Bibliography of 5. A. L.

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USSR

UDC: 535.853.36

BLOKH, A. A., GOLYANDIN, N. S., KOSSOVA, N. F., and LOZINSKAYA, S. B.

"The ISK-24 Infrared Spectrophotometer"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 4, Apr 73, pp 32-34

Abstract: The authors study the new ISK-24 two beam spectrophotometer developed by LOMO (Leningrad Optico-Mechanical Society). The unit is designed for obtaining the absorption spectra of various substances in the 400-4000 cm^{-1} range under conditions of normal and polarized radiation. The unit has high technical characteristics: resolution of 0.5 cm^{-1} in the 1000 cm^{-1} range, wave number scale accuracy of ± 1 cm^{-1}, and a photometric accuracy of ± 1 percent. The unit is equipped with polarizer gratings developed by the F. M. Gerasimov Laboratory of the State Institute of Optics imeni S. I. Vavilov. The spectrophotometer is based on the null principle.

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USSR

UDC 621.396.626

GOLYANITSKIY, I. A.

"Estimate of n-th Order Moments of Modulated Oscillations"

Moscow, Radiotekhnika, Vol 27, No 1, 1972, pp 72-75

Abstract: In estimating the one-dimensional probability density or certain parameters of a random process, in practice frequently the procedure of experimental determination of the n-th order moments is used. A study has been made of the problem of estimating the initial n-th order moments of a non-gaussian amplitude and phase modulated process

$$x(t) = A(t) \cos \varphi(t),$$

where

$$A(t) = A_0[1 + \alpha_1 \xi'(t) + \beta_1 \psi(t)],$$

$$\varphi(t) = \omega_0 t + \alpha_2 \eta(t) + \beta_2 \nu(t) + \phi,$$

where A_0 is the amplitude, ω_0 is the carrier, $\xi'(t)$ and $\eta(t)$ are random statistically independent processes, $\psi(t)$ and $\nu(t)$ are arbitrary determinant processes, α_i and β_i ($i = 1, 2$) are constants, and ϕ is the initial phase. The conditions

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GOLYANITSKIY, I. A., Radiotekhnika, Vol 27, No 1, 1972, pp 72-75

of being unbiased and the formulas for the dispersion of the estimate are obtained.

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UDC 519.24

GOLYANITSKIY, I. A.

"The Problem of Analysis of the Distributions of Unstable Processes"

Metody Predstavleniya i Apparaturn. Analiz Sluchayn. Protsessov i Poley. 3-y Vses. Simpozium. Sekts. 1 [Method of Representation and Hardware Analysis of Random Processes and Fields, Third All-Union Symposium, Section 1 -- Collection of Works], Leningrad, 1970, pp 21-26, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V201 by V. Noskov).

Translation: It is demonstrated that measurement of a one-dimensional probability density f (x) of a stable random process x (t) can be performed (set averaging) by two equivalent methods: 1) the mathematical meter, "the amplitude characteristic of which is a δ function, and 2) a method based on expansion of f (x) with respect to the full orthonormalized system of functions with unit weight, $f(x)=\sum_{n=1}^{\infty} c_n \varphi_n(x)$. If process x (t) is unstable, the nature of the instability is precisely known in advance, the distribution f (x, t) can be determined by similar methods. The generalization of these methods to cover the case of multidimensional random processes is analyzed.

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1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--INFLUENCE OF PHASE MODULATED OSCILLATIONS ON A NONLINEARITY AND A FILTER -U-

AUTHOR-(02)-GOLYANITSKIY, I.A., POLYANSKIY, A.S.

COUNTRY OF INFO--USSR

SOURCE--RADIOTEKHNIKA I ELECTRONIKA, VOL. 15, APR. 1970, P. 841-845

DATE PUBLISHED----APR70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PHASE MODULATION, ELECTRIC FILTER, CORRELATION FUNCTION, NONLINEAR SYSTEM, CIRCUIT ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1073 STEP NO--UR/0109/70/015/000/0841/0845

CIRC ACCESSION NO--AP0118228

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118228

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF EXPRESSIONS FOR THE CORRELATION FUNCTIONS OF PROCESSES APPEARING AT THE OUTPUT OF NONLINEAR FOUR TERMINAL NETWORKS HAVING A TUNED LOAD IN THE FORM OF A HIGH O OSCILLATORY CIRCUIT, IN THE CASE WHERE A PHASE MODULATED SIGNAL ACTS ON THE SYSTEM. THE OUTPUT CORRELATION FUNCTION OF A NONLINEARITY FILTER SYSTEM IS DETERMINED AS A FUNCTION OF THE PARAMETERS OF THE FILTER AND THE PHASE MODULATED PROCESS FOR A SPECIFIC CASE WHERE THE NONLINEARITY IS A RIGID LIMITER.

UNCLASSIFIED

Acc. Nr: AP0043680 GOLYANOV V.M.
Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 528-534

INVESTIGATION OF THE SUPERCONDUCTING PROPERTIES AND STRUCTURE OF TIN FILMS OBTAINED BY REACTIVE SPUTTERING

V. M. Golyanov, A. P. Demidov, M. N. Mikheyeva, A. A. Teplov

The critical temperatures T_c, transverse critical magnetic fields $H_{c\perp}$ and resistivities of microcrystalline tin films obtained by reactive cathode sputtering are measured. The relation between T_c and $H_{c\perp}$ and the structure of films as studied with an electron microscope is investigated. It is found that increase of T_c and $H_{c\perp}$ correlates with a decrease of the grain size. The electron mean free path l is determined on basis of the resistance and magnetic measurements. The dependence of $H_{c\perp}$ on l is compared with the theoretical calculation.

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REEL/FRAME
19770084

Acc. Nr: AP0045153

Abstracting Service: INTERNAT. AEROSPACE ABST. 5/70

Ref. Code: UR0109

A70-23159 # Correlation functions of processes at the output of nonlinearities with odd amplitude characteristics during the transmission of modulated oscillations (Korreliatsionnye funktsii protsessov na vykhode nelineinostei s nechetnymi amplitudnymi kharakteristikami pri prokhozhdenii modulirovannykh kolebanii). I. A. Golianitskii and A. S. Polianskii. *Radiotekhnika i Elektronika*, vol. 15, Feb. 1970, p. 316-321. In Russian.

Derivation of expressions for the mixed second-order moment of a process at the output of an inertialess nonlinear quadrupole during the transmission of an arbitrary amplitude- and phase-modulated oscillation and an oscillation frequency-modulated by a normal noise. In obtaining these expressions, the amplitude characteristic of the inertialess nonlinear quadrupole is approximated by an odd linearly broken curve. Examples of the application of these expressions are considered. A.B.K.

REEL/FRAME
19780053

USSR

SALIKHODZHAYEV, S. S., and GOL'YEVA, I. V., Candidates of Medical Sciences Uzbek Scientific Research Institute of Sanitation, Hygiene and Occupational Diseases

"Labor Hygiene Problems and the State of LOR [Otorninoaryngological] organs of Workers Employed in Mining and Enrighment of Tungsten and Its Compounds"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 7, Jul 70, pp 8-11

Abstract: To determine the effects of exposure to tungsten on the upper respiratory tract, 592 tungsten mine workers and 120 enrichment plant workers were examined. The mine personnel were divided into three groups, a basic group of 412 underground miners, an auxiliary group of 105 men working underground but not in mining, and a third group of 75 other workers who were occasionally exposed to dust. The 120 men working in the enrichment plant were similarly divided into three groups based on exposure to the dust. Objective examination of these workers showed that the enrichment plant group had a higher proportion of workers with upper respiratory defects than the mining group, probably owing to the technology of enrichment and the content of tungsten in the dust. The mining group showed a direct relationship between length of service and degree of disorders, a phenomenon not observed in the enrichment group. The basic groups had the highest number of ailments. Pathological examinations indicated attacks on the mucuous membrane of the upper respiratory tract, chronic tonsillitis, laryngitis, and defective hearing organs.

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AP0012734 CHEMICAL ABST. 12/69 4H 0171

125345p Unsaturated esters of epoxy resins as binders. Molotkov, R. V.; Levitskaya, O. M.; Shragina, D. I.; Golynkina, V. B. (USSR). *Plast. Massy* 1969, (8), 18-21 (Russ). Epoxy resins ED-5, ED-6, ED-P, and ED-L were esterified with methacrylic acid at 80° in the presence of various catalysts, and the properties of the resulting polyesters, their solns. in unsatd. monomers, and of the hardened polyesters were studied. The most effective catalysts were $PhCH_2NMe_2$ and pyridine. The energy of activation for the esterification in the presence of 0.2 wt. % pyridine was 17 kcal./mole at 60-80°, 18 kcal./mole at 80-100°, and 17.5 kcal./mole at 60-100°. The rate consts. for ED-5, ED-6, ED-P, and ED-L were 2.46×10^{-5}, 2.3×10^{-5}, 2.36×10^{-5}, 2.63×10^{-5}, resp. The polyesters (DM-6) obtained from ED-6 were highly viscous, resinous substances, readily sol. in Me_2CO and TGM-3. Styrene solns. of DM-6 were stable for 9 months. DM-6 was hardened by dissolving in styrene (70% soln.) and heating the resulting soln. for 6 hrs. at 80° in the presence of cumyl hydroperoxide and Co naphthenate. Hardened DM-6 was a rigid, brittle substance with a high degree of Brinell hardness (23-4 kg./mm.^{2}), good Martens thermal stability (90-105°), and low H_2O absorption (0.06%). DBJR

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USSR UDC 625.681.142.652.659:539.293.535.215.12

AZIMKHODZHAYEV, Kh. E. and GOLYMAYA, G. I.

"Obtaining Memory Elements Capable of Room Temperature Operation on the Basis of the Residual Conductivity Phenomenon"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 5-10

Abstract: Residual photoconductivity is defined here as the half-dark conductivity remaining in semiconductors after excitation by light pulses ends. Since it is on the extent of this residual photoconductivity that the effectiveness of the semiconductor as a memory element depends, the authors clarify the conditions under which the residual conductivity is retained for a long time in monocrystalline cadmium sulphide at room temperatures. Their experiments were performed with crystals obtained from the vapor phase. The crystals were highly resistive, were given a mirror-smooth surface, and did not exceed the dimensions of 0.2X0.1X0.01 cm^3. The residual conductivity, with a duration sufficient to attain photocurrent saturation after cutoff of the excitation light, was measured by an electrometric amplifier, within the limits of 10^{-3} to 10^{-12} A, under potentials of 1-5 V. The authors conclude that, to obtain elements with long residual conductivity, the

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AZIMKHODZHAYEV, Kh. E., et al, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 5-10

crystal surface should have its bending zone enriched either by the effect of the field or by surface doping with an indium donor impurity. A table showing the effects of using various dry gases such as air, oxygen, hydrogen and vacuum in making the crystals is given.

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USSR UDC 623.681.142.652.659:539.293:535.215.12

GOLYNAYA, G. I.

"Memory Elements in A_2B_6 Semiconductors Using the Residual Photoconductivity Effect"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 4, 1970, pp 58-69

Abstract: This article is in the nature of a review of the history and current work being done on memory element semiconductors using the residual photoconductivity phenomenon. After a short discussion of the phenomenon as exhibited in CdS and CdSe, the author touches on the work of Skarman, Nicoll, Bube, Sheynkman and Korsunskaya, and others. Curves are given for the drop in current in CdS crystals doped with sodium, at various temperatures as a function of time. A table of adhesion centers and their parameters is also presented. The author describes processes for obtaining various effects in materials containing adhesion centers, and concludes that these processes are insufficient for the room temperature operation of the materials as memory elements. She finds also that the residual conductivity in A_2B_6 is explained by the formation of dual acceptor centers whose single-charge condition is a repelling electrostatic barrier for conductivity electrons.

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UDC: 681.32.001

AZIMKHODZHAYEV, Kh. E., GOLYNNAYA, G. I.

"The Production of Memory Elements Capable of Operating at Room Temperatures Based on the Phenomenon of Residual Photoconductivity"

Poluprovodn. Tekhn. i Mikroelektronika. Resp. Mezhved. Sb. [Semiconductor Technology and Microelectronics. Republic Interdepartmental Collection], No 4, 1970, pp 5-10 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B88, by T. R.)

Translation: The kinetics of the quasi-dark (residual) photoconductivity in CdS monocrystals are studied at room temperature under ordinary conditions and when an external, constant, transverse electric field is applied to the crystal in the field effect enriching mode, when the surface of the crystal is alloyed with a thin layer of various metals (indium, gallium, aluminum, gold, silver, etc.). The influence of the surrounding medium on the kinetics of the drop in photoconductivity is studied. In the enriching mode and with alloying of the surface with indium, the kinetics of photoconductivity are strongly elongated and the decay time is increased by 10^2-10^4 times, reaching several hours.

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AZIMKHODZHAYEV, Kh. E., Golynnaya, G. I., Poluprovodn. Tekhn. i Mikroelektronika. Resp. Mezhved. Sb. [Semiconductor Technology and Microelectronics. Republic Interdepartmental Collection], No 4, 1970, pp 5-10 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B88, by T. R.)

Memory elements with these characteristics, capable of operating at room temperature can be made. Possible mechanisms explaining the conditions under which this anomalously long relaxation time of quasi-dark conductivity arises are discussed. Two illustrations, 19 biblio. refs.

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Acc. Nr.: AN0051323

Ref. Code: UR900

FROM: FBIS, Daily Report, Soviet Union, 31 March 1970, Vol. III, No. 62, p. d 1-2

USSR

USSR MOVING TOWARD AUTOMATED WEATHER FORECASTING

Moscow IZVESTIYA 24 Mar 70 p 3 L

[Interview: "Automatic Machines Prepare Forecasts;" first paragraph is IZVESTIYA introduction]

[Text] Meteorological services in all the world's countries annually observe 23 March as international meteorological day. In this connection IZVESTIYA correspondent B. Konovalov asked USSR Hydrometeorological Service main administration deputy chief G.I. Golyshev to tell of this organization's work.

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As a scientific and technical service the Hydrometeorological Service will always substantially depend on the general level of the country's scientific-technical progress, says Georgiy Ivanovich. It is a link in a common chain. For instance, mastering outer space has made it possible for meteorologists to use satellites to make a whole number of observations of the state of the atmosphere over enormous water surfaces of oceans and seas, and over a number of desert regions of the world's territory. Satellites have become a firm part of the system for collecting information on the state of the earth's atmosphere. At present a permanently operating meteor system using satellites has been put into effect in our country.

Successes in the computer sphere have permitted broad application of previously completed theoretical elaborations of weather forecasting by numerical methods. Now maps are being compiled of fields of atmospheric pressure and temperature for the entire northern hemisphere 1, 2, and 3 days in advance by means of powerful computers.

Scientists from the USSR Hydrometeorological Service are carrying out research using a big detachment of modern scientific ships. Equipment on the 15 ocean-going ships includes meteorological rockets, computers, and a number of other complex automatic devices.

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But, of course, systematically serving the national economy has been and will be the USSR Hydrometeorological Service's main task. Apart from weather forecasts for days ahead, much effort is spent on effective maintenance of civil aviation. The volume of this work can be described by one example: in 1969 alone Moscow's central aviation meteorological station, which services Moscow airports, guaranteed 200,000 aircraft takeoffs. Here there was not one incident of aircraft turning back from their trips because of forecasts which proved incorrect.

The USSR Hydrometeorological Service systematically conducts information work on the state of agricultural sowing. Of big importance are annual forecasts of the scale of spring floods and the dates of the break-up of ice on the rivers. This enables local soviet organs to take timely measures to insure substantial reduction of losses in spring flood time. Forecasts of the probable volume of the water inflow into reservoirs is of great importance in the sphere of hydrology.

If one speaks of the future, the chief result which may be obtained by means of the substantial improvement of hydrometeorological services to the national economy is the timely warning of particularly dangerous weather phenomena. Significant development of the warning service on dangerous phenomena is our main task between 1970 and 1971.

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